

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of

Karl EXEL et al

Group Art Unit: **3744**

Serial No: **10/045,011**

Examiner:

Filed : **January 14, 2002**

For : **MIRROR FOR LASER APPLICATIONS AND
METHOD FOR MANUFACTURE OF SAID MIRROR**

PRELIMINARY AMENDMENT

Commissioner of Patents and Trademarks
Washington, DC 20231

Dear Sir:

Please amend the application as follows:

In the Specification:

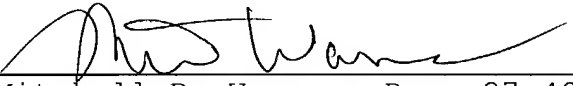
Please substitute new paragraph 42 as provided herebelow for paragraph 42 as originally filed in this application. We are also including a marked-up copy of paragraph 42 herewith.

[042] As depicted in Figures 3 and 4, these cooler layers **11** are structured, i.e. provided with a plurality of openings and material stays surrounding these openings, in such a way they form two chambers **12** and **13** for the inlet and outlet of a preferably liquid coolant, for example water, and between these chambers a cooling area **14** with a finely structured network of passageways formed by the openings **11'** for the coolant, which paths continuously branch out in all three perpendicular spatial axes, so that the coolant flows through this cooling area **14** being constantly diverted in all three spatial axes, thus producing an intensive cooling effect.

Remarks

The purpose of this Amendment is to reconcile the specification with the drawings in this application.

Respectfully submitted,

by 

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April 11, 2002

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[038] intermediate layer 9;

[039] bottom copper layer 10 that forms the bottom 3 of the mirror 1.

[040] The intermediate layers 5 and 9 are made of a material that has a much lower heat expansion coefficient than the copper of the copper layers, namely equal to or less than 10×10^{-6} [1/K]. The intermediate layers 5 and 9 are preferably made from the same material.

[041] The cooler structure 7 consists of a plurality of copper layers 11 that are connected with each other on the surface, the surfaces of which are also parallel to the top 2 and bottom 3 of the mirror b.

[042] As depicted in Figures 3 and 4, these cooler layers 11 are structured, i.e. provided with a plurality of openings ~~11~~ and ~~11'~~ and material stays surrounding these openings, in such a way they form two chambers 12 and 13 for the inlet and outlet of a preferably liquid coolant, for example water, and between these chambers a cooling area 14 with a finely structured network of passageways formed by the openings 11' for the coolant, which paths continuously branch out in all three perpendicular spatial axes, so that the coolant flows through this cooling area 14 being constantly diverted in all three spatial axes, thus producing an intensive cooling effect.

[043] Furthermore, the cooler layers 11 are structured in such a way that continuous posts 15 made of copper are formed from the structuring or sections of the material stays surrounding the openings 11' in the connecting cooler layers, the longitudinal sides of which posts are perpendicular to the levels of the layers of the mirror 1 and, as the remaining wing-like sections of the structured cooler layers 11 protruding from these posts 15, are also subjected to the intensive flow of coolant. The posts 15 are needed for the effective infusion of the heat to be discharged into the cooling area 14 or the coolant. The posts 15 are also needed for the mechanical stability of the mirror, especially to prevent the expansion of the cooler structure 7 and therefore of the mirror 1 in general